CLAIMS

WHAT IS CLAIMED IS:

1. A method of analyzing anisotropic turbulent flows of an anisotropic fluid comprising:

defining a set of moment equations governing time average thermal and turbulent motion, directional kinetic energy, shear, directional kinetic energy fluxes, and structure correlations; and

defining n^{th} order directional kinetic energy fluxes and structure correlation equations closure relationships using $(n + 1)^{th}$ order density gradient independent time average thermal and turbulent moment closure relationships to yield a set of closed time average turbulent moment equations.

2. The method of claim 1 wherein the set of moment equations governing time average turbulent directional kinetic energy, shear, directional kinetic energy fluxes, and structure correlations is defined by Equation Set 12.

3. The method of claim 1 wherein n is odd.

4. The method of claim 3 wherein the density gradient independent time average thermal moment closure relationships are defined by Equation Set 16.

5. The method of claim 3 wherein the density gradient independent time average turbulent moment closure relationships are defined by Equation Set 17.

6. The method of claim 1 further comprising solving $(n + 1)^{th}$ and $(n + 2)^{th}$ order moment sets.

7. The method of claim 1 wherein the set of closed time average turbulent moment equations are defined by Equation Set 15.

8. A method of analyzing time average directional thermal energy in turbulent flows of an anisotropic fluid by solving Equation 15-3.

9. A method of analyzing time average thermal shear in turbulent flows of an anisotropic fluid by solving Equation 15-4.

10. A method of analyzing time average directional thermal energy fluxes in turbulent flows of an anisotropic fluid by solving Equations 15-5 and 15-6.

11. A method of analyzing time average thermal structure correlation in turbulent flows of an anisotropic fluid by solving Equation 15-7.

12. A method of analyzing time average directional turbulent energy in turbulent flows of an anisotropic fluid by solving Equation 15-8.

13. A method of analyzing time average turbulent shear in turbulent flows of an anisotropic fluid by solving Equation 15-9.

14. A method of analyzing time average turbulent directional energy fluxes in turbulent flows of an anisotropic fluid by solving Equations 15-10 and 15-11.

15. A method of analyzing time average turbulent structure correlation in turbulent flows of an anisotropic fluid by solving Equation 15-12.

16. A method of analyzing turbulent flows of an isotropic liquid comprising:

defining a set of moment equations governing time average directional kinetic energy, shear, directional kinetic energy fluxes, and structure correlations;

defining n^{th} order directional kinetic energy fluxes and structure correlation equations closure relationships using $(n + 1)^{th}$ order density gradient independent time average thermal and turbulent moment closure relationships to yield a set of closed time average turbulent moment equations;

setting all directional thermal energies equal and solving the total thermal energy equation;

setting density equal to a constant.

17. The method of claim 16 further comprising solving the resultant equation set.

18. The method of claim 16 further comprising adding the resulting turbulent flow equation set to conventional Navier Stokes equations for isotropic fluids and solving the now closed turbulent Navier Stokes set.